Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
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Modernizing the E-rate Program for Schools and Libraries	)	WC Docket No. 13-184
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COMMENTS OF NEW AMERICA FOUNDATION'S OPEN TECHNOLOGY INSTITUTE AND EDUCATION POLICY PROGRAM

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Executive Summary

The New America Foundation's Open Technology Institute and Education Policy Program offer the following recommendations in support of the Federal Communications Commission's goal to better address the broadband capacity needs of schools and libraries. These reply comments reiterate the broad principles outlined in our initial comments, respond to ideas and concerns expressed by other commenters, and distill and tighten recommendations for achieving the Commission's outcomes for the E-rate program. The proposed reforms are designed to improve broadband infrastructure to increase capacity for schools and libraries and provide more opportunities for innovation and flexibility in the use of that capacity at the institutional level, while enhancing accountability on the part of broadband providers.

The E-rate Fund should encourage significantly more community investment in fiber infrastructure. We express support for the proposal offered by EducationSuperHighway to create an Upgrade Fund to spur investment in fiber infrastructure. We also recommend that the Commission implement minimum service standards to ensure that the Upgrade Fund is utilized

and to hold providers accountable for investing in upgrades on their networks to provide better connectivity to schools and libraries.

To foster digital inclusion, we recommend that the E-rate Fund preserve schools and libraries' ability to facilitate greater community connectivity where feasible. Schools' and libraries' ability to maintain open Wi-Fi hotspots, both during and outside of business hours, should be recognized in any reforms. Further, the Commission should allow greater flexibility for schools and libraries to better facilitate the deployment of innovative network solutions that can increase community connectivity in the future.

The Commission should implement smart data collection practices to improve the efficacy of the Fund and promote greater transparency. We reiterate the belief that better E-rate data will benefit schools and libraries, researchers, policymakers, and the public, and that the Commission should collect and release Form 471 data in a machine-readable format; modify the forms to collect more streamlined and useful information from schools and libraries; and increase the transparency of the program by collecting and releasing more granular pricing data. Releasing this data will not discourage competition or unnecessarily duplicate state-level public disclosure processes, and a more streamlined approach to E-rate reporting requirements will ensure that reforms to those requirements do not increase the burden on schools and libraries.

Finally, we emphasize that E-rate funds should be distributed in a way that promotes fair and equitable service and speed for students and patrons of all schools and libraries. The Commission should not distribute support from the E-rate Fund through fixed allocations such as in a per-pupil or per-patron funding scheme. Moreover, given its primary objective of expanding broadband connectivity, E-rate funding should not be distributed based upon educational impact

measures. Finally, the E-rate Fund should seek to improve support for non-traditional education—especially in the case of early education—equitably across all states where possible.

I. Introduction

Since 1996, the E-rate program has been helping the nation's schools and libraries build the infrastructure needed to provide critical access to new tools and technologies for learning. Seventeen years later, many schools and libraries throughout the country are making tremendous strides, building 21st century learning environments upon a foundation of broadband service. Access to affordable, high-capacity broadband is a cornerstone of transformative learning in schools and libraries across the country, and the record in this proceeding is replete with examples of innovative states, districts, and individual institutions that are leveraging technologies to facilitate collaborative learning, responsive teaching, robust access to important tools, and hands-on building and creating.

Yet access is not yet available for all, and it is certainly not yet sufficient to meet the educational needs of users today, let alone of users tomorrow. We therefore commend the Federal Communications Commission ("Commission") for initiating an ambitious proceeding to improve broadband access in our schools and libraries, and welcome the opportunity to respond to the many impressive submissions by advocates representing a wide variety of interests. Our proposed reforms are designed to improve broadband infrastructure to increase capacity for schools and libraries and provide more opportunities for innovation and flexibility for using that capacity at the institutional level, while enhancing accountability on the part of broadband providers.

These reply comments reiterate the broad principles outlined in our initial submission, respond to ideas and concerns expressed by other commenters, and distill and tighten our recommendations for achieving the Commission's stated outcomes for the E-rate program. The principles guiding our recommendations include the need for:

- investing in fiber infrastructure to ensure that E-rate investments are able to meet present and future connectivity needs;
- recognizing that learning extends beyond school walls and into communities, and as such requires flexibility for schools and libraries to meet the needs of users throughout their greater communities;
- understanding that robust data allows applicants, researchers, the Commission, and the public to assess the E-rate program and conduct data-driven analysis of reforms;
- and promoting fair and equitable access to communications technologies across the applicant pool.

II. The E-rate Fund should encourage significantly more investment in fiber infrastructure.

There is broad consensus among commenters that robust fiber investment is a critical step in helping schools and libraries meet the present and future needs of their students, staff, and patrons. It is also clear that achieving the goals outlined by the Obama Administration in its ConnectED proposal, and the vision outlined by Commissioner Rosenworcel and Senator Rockefeller, will require specific policy reforms to ensure that this investment is occurring. These reforms should include an emphasis on fiber investments, particularly those at the community level.

To that end, we support the proposal offered by EducationSuperHighway to create an "Upgrade Fund" to ensure that these investments happen quickly and efficiently, although we reiterate that speed and service requirements are also important to prevent schools and libraries from relying on outdated, overpriced service offerings. Indeed, because the Upgrade Fund is envisioned as a temporary, one-time solution, the Commission must implement both "carrots" and "sticks" to ensure that as many institutions as possible make the move to fiber now, rather than later, which could result in continued, unnecessary drains on the Fund. As EducationSuperHighway notes, particularly for areas without robust facilities-based competition, "dedicated fiber will have to be deployed eventually; it is just a matter of how much time will pass before getting started and how many billions of dollars will be wasted by continuing to

procure bandwidth in the current uneconomical fashion."[1] To achieve this investment in a timely, efficient way, we reiterate the need for not just target speeds, but also required standards that providers must meet. These standards should ensure that providers are actually taking steps toward fiber investment, rather than continuing to provide service based on technologies that lack the scalability and reliability to grow with the broadband needs of the education community.

We are sensitive to concerns that infrastructure investments will be made at the expense of meeting other communications needs, particularly when the Fund is already oversubscribed. As we noted previously (and as many others have also noted), more funding should be made available for the E-rate program.[2] However, we also believe that making smart investments in the program now will allow the technology to scale more efficiently as educational needs grow.

A. We support the proposal offered by EducationSuperHighway to create an Upgrade Fund to spur investment in fiber infrastructure.

Gigabit speeds for anchor institutions are an objective that precedes this proceeding. Goal #4 of the National Broadband Plan stated that "[e]very community should have affordable access to at least 1 gigabit per second broadband service to anchor institutions," and we have seen that need increase as schools and libraries capitalize on new innovative and interactive technologies.[3]

Throughout the docket we find examples of innovative uses of high-capacity Internet access. The State Educational Technology Directors Association (SETDA) notes that "[d]igital

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[1] Comments of EducationSuperHighway, WC Docket No. 13-184 (September 16, 2013) ("EducationSuperHighway Comments") at 20.

[2] Comments of New America Foundation's Open Technology Institute and Education Policy Program, WC Docket No. 13-184 (September 16, 2013) ("NAF Comments") at iv; Comments of State Educational Technology Directors Association (SETDA), WC Docket No. 13-184 (September 16, 2013) ("SETDA Comments") at 22; Comments of the American Library Association, WC Docket No. 13-184 (September 16, 2013) ("ALA Comments") at 12.

[3] Federal Communications Commission, Connecting America: The National Broadband Plan, (National Broadband Plan),Goal #4, available at http://www.broadband.gov/download.

learning is necessary to approach the higher levels of critical thinking set forth in new college and career ready state standards, to meet the individual needs of every student, to support and enhance teachers in improving their practice, and to realize cost-savings in school operations."[4] The Utah Education Network (UEN) provides an interactive video conferencing system to connect "thousands of students and educators at more than 940 locations at public schools, applied technology colleges and college campuses,"[5] and the network "provides access to instruction, college-level classes, and curriculum across vast distances otherwise not available to communities."[6] Others highlight additional uses such as 3D-printing and game-based learning that can dramatically enhance educational experiences.[7]

The American Library Association (ALA) explores the ways in which libraries across the country are leveraging capacity to use technology in innovative ways. They point to iPad labs to encourage preschool literacy, technology clubs that encourage coding and animation skills, and the ability of libraries to "enabl[e] people to create as well as consume content, including recording and sharing video and audio portfolios."[8] The E-rate fund should ensure that the ability to offer simultaneous, interactive tools to library patrons is not just available to a select few, but rather that the Fund facilitates those opportunities for all.

In addition to the opportunities that result from high-capacity Internet access, commenters from the school and library communities recognize the value of fiber as a cost-effective solution for meeting their capacity needs. As Nebraska's Office of the Chief Information Officer (Nebraska OCIO) notes, "optical fiber is the most cost-effective and future-

[4] SETDA Comments at 9.
[5] Comments of Utah Education Network (UEN), WC Docket No. 13-184 (September 16, 2013) ("UEN Comments") at 2.
[6] UEN Comments at 2
[7] Comments of Benton Foundation, WC Docket No. 13-184 (September 16, 2013) at 12-13
[8] ALA Comments at 9.

proof method of delivering high-capacity broadband to schools and libraries."[9] Similarly, Weslaco Independent School District (Weslaco) "found that fiber-optic cable … is the most cost-effective long-term solution to connectivity for our school district" and notes that "installation of private fiber-optic cable, owned by the school district, could save millions of dollars annually."[10]

The first step in achieving greater fiber availability is to make sure that the E-rate program is both adequately funded and that funds are explicitly available for fiber infrastructure costs. We therefore support the recommendation of EducationSuperHighway to create a dedicated Upgrade Fund to support these costs. As we have noted, this will likely require additional resources for the already-constrained E-rate Fund, even beyond increases needed to meet demands today. However, this investment is tremendously important, and time-sensitive.

Failure to adopt policies to promote robust, ubiquitous fiber infrastructure will ultimately further economic and geographic divides that already impact communities across the country, with low-income and geographically remote locations both frequently suffering from inadequate resources to connect to the Internet at an equivalent level to their higher-income and more urban peers. For these schools and libraries where infrastructure buildout is historically more expensive, there is a risk that the deployment of high-capacity broadband service will be delayed or prohibited, and those institutions (and, importantly, the students and patrons who rely on them) will continue to fall on the wrong side of the digital divide.

Moreover, the comments from schools and libraries regarding the importance and value of high-capacity broadband access demonstrate not only the need for fiber investments, but in many cases show that broad fiber buildout is feasible as well. Many states such as South Dakota,

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[9] Comments of the State of Nebraska, Office of the Chief Information Officer, WC Docket No. 13-184 (September 16, 2013) ("Nebraska CIO Comments") at 8.

[10] Comments of Weslaco Independent School District, WC Docket No. 13-184 (September 16, 2013) ("Weslaco Comments") at 5.

Nebraska, and Utah are already pursuing statewide fiber infrastructure. The UEN echoes others' praise of fiber, noting that "fiber infrastructure is the most cost-effective way to deliver advanced, high capacity broadband because it is the most 'future proof' method of delivery."[11] Further, "[r]elatively small incremental costs and/or construction is required to scale up available capacity from the immense potential capacity that fiber provides."[12] Communities like Weslaco also offer examples of widespread fiber buildout at the local level.[13]

These examples demonstrate that robust fiber connectivity for educational institutions is not only affordable, but also achievable for densely-populated urban areas as well as rural areas. This runs counter to assertions by AT&T and others that network construction and maintenance falls outside of the abilities of entities beyond traditional communications carriers.[14] Instead, it demonstrates the need for robust support of alternative delivery models to support efficient fiber investments.

B. The Commission should also implement minimum service standards to ensure that the Upgrade Fund is utilized.

If the Upgrade Fund is the "carrot" for fiber investments, service requirements that ensure that schools and libraries are taking advantage of the time-limited Fund should be the "stick." As SETDA notes, "it is in the national interest to modernize E-rate to ensure a baseline capacity in

[11] UEN Comments at 5. Comments of South Dakota Department of Education and Bureau of Information and Telecommunications, WC Docket No. 13-184 (September 16, 2013) ("SD Dept. of Ed. Comments") at 6.
[12] UEN Comments at 5.
[13] Weslaco Comments at 4.
[14] Indeed, it's assertion that schools and libraries (which implicitly includes districts and localities) "have no background in the challenges of managing broadband networks," and "are not equipped and should not take on an entirely new role as broadband providers," does not reflect the reality of the record in this proceeding. Comments of AT&T Inc. WC Docket No. 13-184 (September 16, 2013) ("AT&T Comments") at 8.

and throughout all schools and incent continued digital learning innovation."[15] Efforts to modernize the program will be strengthened if the Commission implements those baselines as requirements in order to hold broadband providers accountable for making ongoing technological improvements. These requirements are not designed to place additional burdens on applicants, but to ensure that carriers and communities are taking steps toward fiber deployments rather than waiting until it is too late.

We certainly would not like to see fiber infrastructure investments at the expense of *any* improvement to school and library connectivity, and we recognize that schools and libraries may need to reply on other types of connectivity even as they transition to fiber investments. Indeed, we direct many of our concerns in this section to the existing E-rate supported providers, who have proven unreliable at best in their willingness to invest in improvements to their networks.[16] We believe the Commission should hold providers, as beneficiaries of government subsidies for service, accountable for certain service requirements, and should encourage other, community-driven models for connecting schools and libraries to gigabit speeds.

Yet even absent any concerns related to broadband providers themselves, other technologies discussed in the docket are generally insufficient to account for the expected tremendous growth in connectivity needs in the coming years. Some commenters point to

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[15] SETDA Comments at 17.

[16] *See* Interview with Carroll County Public Schools Chief Information Officer Gary Davis by Christopher Mitchell, (April 23, 2013) audio file available at: http://www.muninetworks.org/content/carroll-county-explains-many-benefits-county-owned-fiber-community-broadband-bits-43 At approximately the 7 minute mark, Mr. Davis discusses why leased T-1 connections were not adequate for the school district. At the 9 minute mark, he explains that he did not expect incumbents to invest in their facilities -- this acknowledgement led the county to build their own network. *See also* Jeff Gerth, AT&T, Feds Neglect Low-Price Mandate Designed to Help Schools, ProPublica (May 1, 2012) *available at* http://www.propublica.org/article/att-feds-ignore-low-price-mandate-designed-to-help-schools ("Gerth Article")

DOCSIS 3.0 as a viable alternative to fiber.[17] While the DOCSIS 3.0 standard has certainly improved the capacity of cable networks, it still does not presently offer capabilities for gigabit speeds, and retail business class connections typically do not offer symmetrical speeds. Several commenters have noted that fiber is the optimal infrastructure to upgrade and scale to meet the future bandwidth needs of schools and libraries.[18] Other technologies such as DSL and satellite are even more limited in their ability to meet capacity needs, and satellite is often further hampered by reliability issues and subject to restrictive data caps.[19] Finally, as we explain more fully in the next section, data services operating using 3G/4G/LTE technology over licensed spectrum present their own challenges. Mobile data should be used only for supplemental capacity, rather than for the baseline broadband infrastructure at the institutional level.

Some commenters suggest that the E-rate program should remain "technology neutral," which may be appealing when considering the notion that programmatic decisions should, in general, occur at the local and even institutional level. The reality, however, is that gigabit speeds will soon be necessary not just for the country's largest schools and libraries, but for schools and libraries of nearly every shape and size. With the number of Internet users in schools expected to continue to grow significantly,[20] current capacity needs could be obsolete in a matter

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[17] *See, e.g.,* Comments of the National Cable and Telecommunications Association (NCTA), WC Docket No. 13-184 (September 16, 2013) ("NCTA Comments") at 4.
[18] UEN Comments at 5; Weslaco Comments at 5; Nebraska CIO Comments at 8.
[19] Rob Pegorano, Rural Options for Speedy Internet Still Tough, USA Today (October 7, 2012) *available at* http://www.usatoday.com/story/tech/personal/2012/10/07/rural-broadband-options/1613461/.
[20] Paving a Path Forward for Digital Learning in the United States, LEAD Commission, *available at* http://www.leadcommission.org/sites/default/files/LEAD%20Commission%20Blueprint.pdf ("LEAD Commission Blueprint") at 1.

of months.[21] When it comes to responding to increases in needs, the Leading Education by Advancing Digital (LEAD) Commission notes that "the American education system is historically risk-averse," resulting in purchase decisions that "skew towards 'safe' traditional products."[22] Given this tendency to skew toward the safe, we believe that the Commission should actively encourage schools and libraries to move toward fiber leasing, purchasing, and building arrangements. An Upgrade Fund is an important step in promoting that investment; service requirements are another.

There may be situations where service requirements create an unreasonable burden on schools and libraries, particularly in extremely remote or geographically-isolated areas, and we recognize the need for exceptions in these truly exceptional cases.[23] As UEN explains, "certain circumstances for some locations may render fiber solutions forever impractical, but UEN would hope that these are limited to the extent possible."[24] We look forward to working with the Commission and other stakeholders to determine what the scope of those exceptions might be.

Exceptions aside, we reiterate that the proposed SETDA targets make sense as a starting place for discussion about what sensible requirements would look like for schools and on what timeline. At this juncture we suggest that the timeline and speeds for the latter (2017-2018) school year would allow sufficient time to accommodate infrastructure investments and buildout, but we look forward to continued discussions with the Commission to determine a reasonable timeframe. For libraries, we would suggest a speed beyond the benchmark of 1 Mbps per device

[21] For example, the Illinois Department of Central Management Services explains that, "[w]hile we agree that smaller schools and libraries may not need the bandwidth provided by fiber connectivity in the short or medium term, we believe in the long term, only fiber based technologies will provide the required bandwidth." Illinois Department of Central Management Services, WC Docket No. 13-184 (September 15, 2013) ("CMS Comments") at 10.
[22] LEAD Commission Blueprint at 9.
[23] NAF Comments at 9.
[24] UEN Comments at 5.

that ALA highlights as a recommendation of needs *today*, given that we certainly agree with ALA that "goals for 2015, 2018 and beyond should obviously aim higher."[25]

Improving access through dedicated funding and increased provider accountability are critical steps in achieving the Commission's objective of "modernizing the program to ensure that our nation's students and communities have access to high-capacity broadband connections that support digital learning while making sure that the program remains fiscally responsible and fair to the consumers and businesses that pay into the universal service fund."[26] By supporting scalable fiber infrastructure investments, the program will be less reliant on traditional models of broadband service over outdated technology and will encourage greater efficiencies going forward.

III. To foster broad digital inclusion, the E-rate Fund should preserve schools' and libraries' ability to facilitate greater community connectivity where feasible.

As schools and libraries across the country have demonstrated, the flexibility to serve as anchors for community connectivity has led to greater digital inclusion, especially in the most remote and impoverished areas of the country. The ability of schools and libraries to strengthen and connect communities is bolstered by efforts to expand broadband access, not just during regular operating hours but also on weekends, in the evenings and, geographically, beyond institutional walls. Traditionally, learning has extended beyond the walls of schools and libraries and into communities and homes. As new technologies become increasingly integral to the learning process, so too does access to digital learning tools outside of the classroom. Schools and libraries have a role in facilitating greater connectivity throughout communities and can help

[25] ALA Comments at 11.
[26] NPRM ¶ 2.

to increase opportunities for digital learning, particularly for those in underserved areas where home broadband may not be available or affordable.

While recognizing the constraints on E-rate funding, the Commission should seek to ensure that community connectivity is not hampered by restrictions on how schools and libraries can use services funded by E-rate to leverage connectivity beyond the institutions themselves. It is critical that the Fund support strategic and sustainable investments in broadband infrastructure, while prioritizing cost-effective solutions with future-proof capacity. At the same time, connectivity does not begin and end with connecting school and library buildings to the Internet, thus it is important to structure the rules around wireless access in a way that gives schools and libraries the flexibility to determine what is best for students, patrons, and other members of the community.

A. Schools and libraries should have the explicit ability to maintain open Wi-Fi hotspots, both outside of and during business hours.

Commenters provide numerous examples of the value added from allowing schools and libraries to maintain open wireless connections.[27] Thus, as we have already emphasized,[28] the

[27] SETDA Comments at 19; Comments of McGraw-Hill Education, WC Docket No. 13-184 (September 16, 2013) ("McGraw-Hill Education Comments") at 12-13; Comments of the Kentucky Department of Library and Archives, WC Docket No. 13-184 (September 16, 2013) ("KY Dept. of Libraries and Archives Comments") at 7; Comments of Iowa Department of Education, WC Docket No. 13-184 (September 16, 2013) ("Iowa Dept. of Ed. Comments") at 6; SD Dept. of Ed. Comments at 24; Comments of the Texas Education Telecommunications Network, WC Docket No. 13-184 (August 30, 2013) ("Texas Education Telecommunications Network Comments") at 3; Comments of the City of Boston, Massachusetts, WC Docket No. 13-184 (September 16, 2013) ("Boston City Comments") at 7-9; Comments of the Capistrano Unified School District, WC Docket No. 13-184 (September 16, 2013) ("CUSD Comments") at 4; Comments of the Houston Independent School District, WC Docket No. 13-184 (September 16, 2013) ("HISD Comments") at 3; Comments of Los Angeles Unified School District, WC Docket No. 13-184 (September 16, 2013) ("Los Angeles Comments") at 9-10; Comments of the City of Philadelphia, WC Docket No. 13-184 (September 16, 2013) ("City of Philadelphia

Commission should ensure that schools are not precluded from opening up wireless hotspots when those hotspots would better serve the needs of students, their families, and communities during after-school hours, and during school hours where appropriate.[29] The South Dakota Department of Education and Bureau of Information and Telecommunications commented that providing wireless hotspot service "would encourage the sharing of resources and create a more efficient use [of bandwidth]. To have the bandwidth / services basically sit idle from 3:00 pm to 7:00 am daily is not an efficient use."[30] Further, as we indicated in our initial comments, a hard distinction between "school hours" and "non-school hours" does not necessarily exist, so overly prescriptive rules based on those definitions may unnecessarily restrict efficient network uses.[31]

Sound policies would also allow libraries to incorporate wireless hotspots into their network design, underscored with the same principle of flexibility and recipient-choice. While the NPRM does not specifically mention the use of wireless community hotspots by libraries, the ALA notes that "libraries already provide public internet access and a full range of internet-enabled services to the entire community."[32] The success of libraries in creating open wireless access for patrons should be viewed as an example of what is possible in schools as well.

B. Greater flexibility for schools and libraries will better facilitate the deployment of innovative network architectures that can increase community connectivity.

In addition to allowing schools and libraries to maintain wireless hotspots on site, the E-rate Fund can also be structured to give schools and libraries the flexibility to further leverage

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Comments") at 11-12; Comments of the San Diego County Office of Education, WC Docket No. 13-184 (September 13, 2013) ("San Diego Comments") at 6.
[28] NAF Comments at 11.
[29] NAF Comments at 11.
[30] SD Dept. of Ed. Comments at 24.
[31] NAF Comments at 11-12.
[32] ALA Comments at 31.

their institutional connectivity to increase access in the community at large. This flexibility can be achieved most effectively by encouraging investment in robust wired infrastructure and then giving schools and libraries the freedom to develop innovative methods for extending this connectivity beyond their walls. Accordingly, our vision for facilitating community connectivity through E-rate focuses on these types of models, rather than on support for parallel services such as mobile data and devices; the Commission should not prioritize supporting these parallel services over other more efficient and future-proof technologies. As the Kentucky Department of Education noted, "Within the eligible school locations, local WIFI connected to a high-speed WAN internet connection should be the preferred method of providing Internet access."[33]

In discussing connectivity outside of the classroom, several commenters focused on support for off-campus broadband in the form of mobile data services, including the Learning On-the-Go pilot project which the Commission launched in 2011.[34] While we are sensitive to their concerns about whether mobile data plans and equipment might be removed from the list of supported services entirely, we strongly urge the Commission not to prioritize these services over wired infrastructure in this context. Schools and libraries should have flexibility to support community connectivity where appropriate, but the Commission should not favor mobile data solutions over investment in wired infrastructure, which has much greater capacity, provides a more consistent level of quality of service, and, particularly in the case of fiber, can be more easily upgraded to support future needs. In this regard, while we commend the Education Coalition's focus on new models for online learning as a priority for E-rate reform, we disagree with their assertion that the current E-rate program "does not have a clear path to fund new

[33] Comments of the Kentucky Department of Education, WC Docket No. 13-184 (September 16, 2013) ("KY Dept. of Ed. Comments") at 3.
[34] Los Angeles Comments at 9-10.

models that increasingly rely on mobile devices and connectivity."[35] As we explain in further detail below, this can be achieved by leveraging institutional connectivity, rather than relying on support for mobile data services.

Full-scale support of 3G/4G/LTE connectivity would not be the most cost-effective way to use E-rate funding to facilitate greater community connectivity. Mobile data services are generally much more expensive than wired services and offer slower and more unreliable speeds than other alternatives such as high-speed wired connections delivering Wi-Fi.[36] Moreover, the plans offered by major wireless carriers often come with low data caps that can make using them for online learning—particularly when it relies on rich media or other bandwidth-heavy applications—prohibitively expensive.[37]

There are also technical advantages to models for community connectivity that focus on use of unlicensed spectrum rather than mobile data delivered by the carriers over exclusively-licensed spectrum. A number of studies have shown that in the face of increasing demand for mobile data, transmitting data over the carriers' 3G/4G/LTE networks is far less efficient than offloading that data onto Wi-Fi that uses unlicensed spectrum and relies on a wired backbone.[38] Simply put, Wi-Fi can carry more data faster, and uses considerably less spectrum than mobile

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[35] Comments of Education Coalition, WC Docket No. 13-184 (September 16, 2013) ("Education Coalition Comments") at 29.

[36] For more on the price and speed differences between home and mobile broadband services, see Hibah Hussain, Danielle Kehl, Patrick Lucey, and Nick Russo, "The Cost of Connectivity 2013," New America Foundation (October 2013) *available at* http://newamerica.net/publications/policy/the_cost_of_connectivity_2013.

[37] For more on the impact of data caps on online learning, see Benjamin Lennett and Danielle Kehl, "Data Caps Could Dim Online Learning's Bright Future," *The Chronicle of Higher Education* (March 4, 2013) *available at* https://chronicle.com/article/Caps-on-Data-Use-Dim-Online/137653.

[38] See Mark Cooper, "Efficiency Gains and Consumer Benefits of Unlicensed Access to the Public Airwaves," Fordham University (March 2012) *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2030907.

networks. As highlighted in a recent paper, "One of the many proven benefits of unlicensed spectrum is that it facilitates spectrum frequency reuse over very small areas (a home, business, or school). Ruth Milkman, [former] chief of the FCC's Wireless Bureau, stated recently that the aggregate capacity of the world's Wi-Fi networks 'is 28 times greater than the capacity of the world's 3G and 4G networks, which use licensed spectrum.'"[39]

While we urge the Commission to prioritize support for investment in greater institutional capacity that can be easily upgraded over time, we recognize that innovation is ongoing and that it is important to maintain some flexibility in the rules to support creative network architectures that could leverage institutional infrastructure. Furthermore, we encourage the Commission to continue to examine non-traditional ways that the E-rate program can be used to facilitate community connectivity in the future.[40] This approach reflects the fact that schools and libraries serve as both literal and figurative anchors for their communities, and that they need adequate broadband connectivity within their actual buildings as well as in the community at large in order to enable new online learning models. Beyond providing Wi-Fi hotspots, schools and libraries could achieve this goal through the integration of high-capacity fiber deployments to community anchor institutions with deployments of innovative Wi-Fi technologies to help connect local neighborhoods.[41]

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[39] Michael Calabrese. "Solving the 'Spectrum Crunch': Unlicensed Specturm on a High Fiber Diet." at 7. http://oti.newamerica.net/sites/newamerica.net/files/policydocs/Calabrese_WiFi_Offload_Trend_TWC_FINAL_092413.pdf

[40] As the Texas Education Telecommunications Network explains, "Leveraging E-rate supported infrastructure is one way to help provide students and their community with access until the time when all communities are served with affordable broadband." (Texas Education Telecommunications Network Comments at 3).

[41] For more on this concept, see, Benjamin Lennett, Sarah Morris, Greta Byrum, "Universities as Hubs for Next-Generation Networks," New America Foundation (April 2012) *available at* http://newamerica.net/publications/policy/universities_as_hubs_for_next_generation_networks.

In fact, there are already numerous examples in the record of ways that schools and libraries across the country have already deployed innovative approaches to expand connectivity throughout their communities—some of which have leveraged E-rate funds, and others that institutions have independently pursued. Initiatives such as the City of Boston's Technology Goes Home (TGH) program and the Houston Independent School District's Power Up one-to-one program demonstrate the synergy between community connectivity and the educational goals of the E-rate program.[42] These efforts focus on extending online learning beyond the end of the school day and outside of the classroom so that schools do not have to forego or delay innovative programs because their students do not have equal access to broadband at home.

It is clear from the diversity of comments submitted in this proceeding that schools and libraries have a variety of different needs in providing offsite or roaming Internet access in their communities.[43] Providing schools and libraries with robust connectivity and significant flexibility on leveraging that connectivity for educational uses allows them to determine the best methods for meeting the needs of the communities they serve and may enable innovations that the Commission might not have otherwise imagined. In the long run, expanded connectivity outside library and school walls is a positive and possibly even necessary component of the educational mission of these institutions.

[42] Boston City Comments at 8; HISD Comments at 3.

[43] The Kentucky Department of Library and Archives noted that "[c]lasses offered outside of the library accounted for 13% of the total number, and were offered in community centers, senior centers, churches, housing authorities, Adult Education offices, One Stop centers, and other locations." (KY Dept. of Libraries and Archives Comments at 7). The Iowa Department of Education also noted that for some rural students who spend hours on the school bus each day, unable to stay after school to access the school or public library internet, "districts have proposed equipping their school buses with wireless Internet access to provide connectivity for rural students during the travels to and from school." (Iowa Dept. of Ed. Comments at 6).

IV. The Commission should implement smart data collection practices to improve the efficacy of the Fund and promote greater transparency about broadband availability and quality for schools and libraries.

There is consensus among a number of commenters that better program data—especially increased pricing transparency—would substantially benefit schools and libraries applying for E-rate funding, including incentivizing more efficient purchasing, and making it easier to enforce the rules of the program.[44] We agree with commenters who argue that more transparency would improve accountability in the E-rate program and believe that making these data publicly available in a useful and machine-readable format would make it easier for researchers to analyze various aspects of the program. As SETDA notes, "[p]ricing data negotiated and paid for by E-rate applicants should be made transparent and publicly accessible via an easy-to-use online portal. This transparency will serve the dual purpose of educating applicants and providers both on the varying prices currently paid by applicants, as well as facilitate the conduct of special studies and analyses by interested third parties to identify best practices that can be pursued by future applicants seeking greater cost-efficiencies."[45]

At the same time, several commenters raise concerns about data collection and whether certain pricing and contract information should be made publicly available. Some opposed collecting additional pricing data beyond what is already requested on Form 471, suggesting that

[44] LEAD Commission Comments at 9; Education Superhighway Comments at ii, 26-30; SETDA Comments at 20; Comments of The Software and Information Industry Association, WC Docket No. 13-184 (September 16, 2013) ("SIIA Comments") at 3; Comments of the Kansas State Department of Education, WC Docket No. 13-184 (September 16, 2013) ("Kansas Dept. of Ed. Comments") at 7; Comments of the Massachusetts Department of Telecommunications and Cable, WC Docket No. 13-184 (September 16, 2013) ("MDTC Comments"); Comments of the National Association of State Utility Consumer Advocates, WC Docket No. 13-184 (September 16, 2013) ("NASUCA Comments") at 9-10.

[45] SETDA Comments at 20.

it would be duplicative of other efforts to collect this information and would discourage competition because vendors would not want to publish proprietary information.[46] For example, while Verizon acknowledged that better data would help the Commission decide how E-rate funding should be used and what it should support, it urged the Commission to reject any proposals for more granular data collection or the publication of the bids received.[47] As we explain below, these concerns do not outweigh the enormous benefits that improved data collection will provide.

We therefore urge the Commission to prioritize improvements to the data collection process as it implements E-rate reforms. Improved data collection benefits everyone—it improves accountability and allows the Commission to better evaluate the program; it empowers applicants to better understand available options for communications services; and it provides the public and researchers the ability to better understand broader issues related to broadband access, affordability, and adoption. Specifically, we ask the Commission to collect and release E-rate data in open formats; streamline the Form 471 reporting process in a way that improves standardization and reduces burdens on schools and libraries; and collect and release pricing data from broadband providers.

A. Collecting and releasing E-rate data in open formats will benefit schools and libraries, researchers, policymakers, and the public.

There are numerous public benefits to releasing E-rate data in open formats that can be easily consumed and reused. Open data leads to greater program transparency and helps researchers and policymakers make recommendations in the public interest and identify areas for

[46] SECA Comments at 42.
[47] Comments of Verizon and Verizon Wireless, WC Docket No. 13-184 (September 16, 2013) ("Verizon Comments") at 23-24.

practical government improvement.[48] Datasets such as the 2010 E-rate data that the FCC made public in October 2012[49] can be used and analyzed by researchers to craft better E-rate policy. These data can also be integrated with other datasets such as those maintained by the National Center for Education Statistics (NCES), which collects and analyzes data on education in the United States.[50] Simply providing access to E-rate data on an annual basis could enable analysts to better understand the relationship between broadband access at schools and libraries and other indicators over time, informing better policy on a number of issues. As researchers, we rely on data collected by the FCC through Form 477[51], and we similarly believe that if the information about E-rate collected through Form 471 were made publicly available, it would have myriad potential uses.[52] The FCC is in a unique position to compile data about price, speed, and availability of services, information which otherwise can be quite difficult to obtain.[53]

In addition to improved transparency of the program as a whole, better data would also directly benefit the schools and libraries participating in the E-rate program. Schools and libraries could use this additional information to better comprehend what is technically possible and available when requesting funding and selecting services, as well as hold providers

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[48] The Sunlight Foundation, "Open Data Policy Guidelines," http://sunlightfoundation.com/opendataguidelines/

[49] FCC releases Machine Readable Data on E-rate Program, FCC OFfficial Blog (October 9, 2012) *available at* https://www.fcc.gov/blog/fcc-releases-machine-readable-data-e-rate-program

[50] http://nces.ed.gov/about/

[51] Letter from New America Foundation's Open Technology Institute to Marlene Dortch, Secretary, Federal Communications Commission, WC Docket No. 11-10, et al., at 2 (Filed June 19, 2013).

[52] *See Id.*, and Letter from National Hispanic Media Coalition, New America Foundation's Open Technology Institute, and Center for Media Justice, to Ms. Marlene Dortch, Secretary, Federal Communications Commission, WC Docket No. 11-10, et al., at 1-2 (Filed June 19, 2013). http://apps.fcc.gov/ecfs/document/view?id=7520923327

[53] For more on the challenges of collecting speed and price information for broadband service in the U.S., see Danielle Kehl, "The Slowest Draw in the West," The Weekly Wonk (October 31, 2013) http://weeklywonk.newamerica.net/editions/scary-washington-sandys-legacy/#article-5.

accountable if they are charging schools and libraries more for similar services in the surrounding area. The Massachusetts Department of Telecommunications and Cable writes, "The FCC should also consider ways in which applicants have access to a list of services and pricing in their areas in order to assist in purchase decision-making."[54] Service and price information would help schools and libraries make informed decisions about the best way to meet their needs as well as identify instances where service providers may be violating the lowest corresponding price rule—which a May 2012 investigation by ProPublica revealed is surprisingly common in the E-rate program due to both the complexity of the rule and the lack of transparency.[55]

In general, we tend to agree with the approach suggested by the Software and Information Industry Association (SIIA). SIIA suggests that the Commission continue "to enhance program data access to support program accountability and enhanced cost effectiveness."[56] We support their recommendation that the Commission should adopt technical standards like open meta-data formats that make these data machine readable and widely available, which would improve data analysis. We also support their call for the inclusion of bandwidth speed in Form 471 as well as in a publicly accessible database.[57]

B. Collecting better data at the FCC and making it available will not discourage competition or unnecessarily duplicate state-level public disclosure processes.

Some commenters have suggested that publicizing certain pricing information from bids and contracts would discourage service providers from submitting bids in the first place, and

[54] MDTC Comments at 7.
[55] Gerth Article.
[56] SIIA Comments at 3. We do note that the Software and Information Industry Association does not believe that all data should be made publicly available, but that there is a significant amount that can and should be made public in order to promote accountability and efficiency in the E-rate program.
[57] SIIA Comments at 9.

argue that it would be duplicative of efforts by states that govern the disclosure of public documents.[58] We do not believe that transparency would inhibit competition, but rather the opposite—that opacity discourages competition. Ultimately, we contend that a lack of information about speed and cost favors service providers in the competitive bidding process and can result in schools and libraries paying higher prices for broadband services in certain cases. Moreover, although we acknowledge that certain contract and pricing information may be made available by the states or through Freedom of Information Act (FOIA) requests, we do not believe that these requests are the most effective mechanism for schools, researchers, or the public at large to obtain data about the E-rate program.[59] A piecemeal approach can lead to incomplete or disparate data sets that have far less utility in the pursuit of better program evaluation and accountability. In some cases, it may also create additional work by compelling state governments and other agencies to collect and disclose information or respond to FOIA requests when the Commission already has access to these data in a centralized place.

C. A more streamlined approach to E-rate reporting requirements will ensure that it does not increase the burden on schools and libraries.

As we noted in our initial comments, the E-rate application process can be streamlined so that better and more useful data are collected, while in turn simplifying the process for schools and libraries. Standardizing and automating the Form 470 and Form 471 fields can yield a more uniform dataset and make it easier for schools and libraries to navigate the application process. We agree with commenters who suggest that the Commission "create a single, integrated web

[58] SECA Comments at 41-42.
[59] Laurenellen McCann and Alisha Green, "Reasons to Not Release Data, Part 9: 'Already' Public Data," Sunlight Foundation (October 11, 2013) http://sunlightfoundation.com/blog/2013/10/11/reasons-to-not-release-data-part-9-already-public-data/.

portal for use by USAC, applicants, and vendors,"[60] and support the Commission's proposal to move toward electronic filing of forms and supported documents, which would simplify the application process while improving the usability of program data.[61]

With regard to pricing data, some commenters have expressed concern that requiring schools and libraries to provide more granular information will increase strain on applicants. To avoid this problem, the Commission can rebalance the reporting burden by stipulating that service providers receiving E-rate subsidies report certain pricing information, rather than requesting these data from the schools and libraries themselves. The Kansas State Department of Education suggests that to improve price transparency, the FCC should require providers to publish prices for services and make them available on a searchable website, rather than placing the burden on schools.[62] The Massachusetts Department of Telecommunications and Cable also recommends that the Commission revisit carrier data reporting requirements.[63] Collecting pricing information from carriers would yield additional and important data without adding to—or possibly even reducing—the burden on schools and libraries.

D. The Commission should, therefore, collect and release Form 471 data in a machine-readable format, modify the forms to collect more streamlined and useful information from schools and libraries; and increase the transparency of the program by collecting and releasing more granular pricing data.

We strongly believe that better E-rate data would have significant value to all of the constituencies mentioned above: schools and libraries, researchers, policymakers, and the public at large. The Commission can immediately improve the data reporting process by releasing

[60] EducationSuperHighway Comments at 26.
[61] NPRM ¶ 227.
[62] Comments of the Kansas Department of Education, WC Docket No. 13-184 (September 16, 2013) ("Kansas Dept. of Ed. Comments") at 7.
[63] MDTC Comments at 6-7.

more Form 471 data in a machine-readable format and committing to annual releases of these data going forward. Moreover, the Commission can make these data more robust by publicizing additional associated data and by modifying the forms to collect more usable information from schools and libraries. Furthermore, we urge the Commission to improve these data and increase the overall transparency of the program by collecting and releasing more granular pricing data from service providers who receive E-rate subsidies.

The first step should be to expand upon the Commission's efforts to release the 2010 Form 471 Block 4 data. We urge the Commission to make additional past data public and to continue to release data on an annual basis going forward, so that researchers and the public can examine the longitudinal dataset and analyze program trends over time. We also encourage the Commission to consider expanding the scope of this release beyond Block 4 data and to utilize the unique identifiers assigned to schools and libraries by NCES and the Institute for Museum and Library Services so that these data can be integrated into other existing sources for research and analysis.

In addition to opening up existing data, we urge the Commission to make changes to Forms 470 and 471 to standardize data received and to revisit the carrier reporting requirements to get additional information about price and speed. The Commission should automate this process wherever possible and make it easier for schools and libraries to access information they have reported in the past and indicate where it is still applicable.

If E-rate data are publicly available, we are confident that policymakers and researchers will develop tools to analyze and present these data in a broader context to study trends over time, demonstrate relationships to other variables including geography and educational statistics, and assist policymakers and the private sector in future planning. One example of a tool that has been

developed for such purposes is the broadband mapping project of the Broadband Florida Initiative, which was created "to increase broadband access and adoption through better data collection and broadband planning."[64] The map pulls together census data, National Broadband Map data on community anchor institutions, speed tests, E-rate disbursement figures, and other variables in a visual representation that policymakers can easily access and use.

In its initial comments, the Florida Department of Management Services highlights its broadband mapping tool as an example of how the Commission could "estimate what fraction of schools and libraries have access to at least one broadband provider within the same census block offering broadband at speeds that meet [the Commission's] proposed performance metrics."[65] With access to additional public datasets that contained information, for example, about the actual services community anchor institutions are receiving (including speed and price), researchers and policymakers could use this tool and tools like it for numerous additional purposes. It would also eliminate some or all of the need for the department to rely on a contractor (the Tampa Bay Regional Planning Council) to inventory broadband services and collect data from providers and other sources.[66]

This combination of the release of machine-readable data, streamlined reporting policies for Forms 470 and 471, and improved transparency for price and speed data will greatly improve efficiencies within the program. In addition, added transparency will enable schools and libraries to better assess the services they are receiving and provide broader mechanisms for accountability from the Commission, researchers, and the public at large.

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[64] http://map.broadbandfla.com/.
[65] Comments of the Florida Department of Management Services, WC Docket No. 13-184 (September 16, 2013) at 5.
[66] Florida Broadband Mapping Project, Florida Department of Management Services, http://www.dms.myflorida.com/suncom/broadband_florida_initiative/florida_broadband_mapping_project.

V. E-rate funds should be distributed in a way that promotes fair and equitable service and speed for students and patrons of all schools and libraries.

The E-rate program has made tremendous strides in achieving broadband connectivity for schools and libraries. However, as capacity needs continue to grow, ensuring equitable access to communications services for all educational institutions is more important than ever. To this end, there are a number of funding considerations raised in the NPRM and subsequent public comments that require further deliberation. First, simplifying program funding by moving toward a fixed allocation of the Fund may have an undesirable impact on the provision of fair and equitable service and speed. Further, as we discussed in our initial comments, use of educational impact measures to evaluate the success of the program, especially if tied to future infrastructure funding, would be detrimental to achieving a level digital playing field.[67]

Finally, a number of commenters have highlighted that promoting fair and equitable service for all students and patrons requires additional review of what the Universal Service Administrative Company has termed "non-traditional education." Differentiated treatment of Head Start, pre-kindergarten, juvenile justice, and adult education students and facilities from state-to-state has been the norm, based upon differences in state definitions for public education, and this in turn leads to inequitable use of the Fund. The Commission should carefully consider this funding policy and its effect on achieving fair and equitable access for all E-rate participants.

A. The E-rate Fund should not be distributed through fixed allocations such as a per-pupil or per-patron funding scheme.

There is broad consensus amongst commenters from states, districts, and libraries that a fixed allocation of E-rate funds would detract from the mission of achieving ubiquitous and

[67] NAF Comments at 30-31.

affordable broadband service.[68] Further, the UEN—which has largely helped the state of Utah reach the benchmark of 1,000 mbps per 1,000 students already—offer a statewide perspective on the differentiated needs throughout regions; as they note, "[fixed allocations] do not recognize a fundamental characteristic of Universal Service, that per-capita costs in certain areas, mostly rural, are vastly higher than they are in urban areas."[69]

As we have previously explained, "Broadband service is not priced in a way that costs would increase or decrease proportionally based on student enrollment. In general, while a bigger broadband pipe costs more overall, the price per megabit of capacity goes down (meaning that with more students, schools would get more "bang for the buck" in terms of bandwidth). For small rural districts, schools with enrollment shortfalls, and districts that have opted for smaller class sizes this funding structure could prove challenging and ultimately increase inequities by making it more difficult for smaller schools to pay for adequate connectivity."[70] It would be difficult to determine a reliable per-pupil funding formula when so many costs vary independent of the size of the student body. As the ALA comments succinctly state, "While the simplification

[68] Comments of Alabama State Department of Education, WC Docket No. 13-184 (September 16, 2013) ("Alabama Comments") at 10; Comments of the State of Alaska Department of Education and Early Development and the Alaska State Library, WC Docket No. 13-184 (September 16, 2013) ("Alaska Comments") at 14; California Department of Education, WC Docket No. 13-184 (September 16, 2013) ("CDE Comments") at 11; Comments of the State of Hawaii, WC Docket No. 13-184 (September 16, 2013) ("Hawaii Comments") at 14-15; Kansas State Dept. of Ed Comments at 6; UEN Comments at 15; Comments of the Butte County Office of Education, WC Docket No. 13-184 (September 16, 2013) ("BCOE Comments") at 5; Comments of the New York City Department of Education, WC Docket No. 13-184 (September 16, 2013) ("NYCDOE Comments") at 4-5.

[69] UEN Comments at 14.

[70] Danielle Kehl and Lindsey Tepe. "An Alternative to E-rate 2.0: Another FCC Commissioner's Vision for Restructuring the Schools and Libraries Program." http://oti.newamerica.net/blogposts/2013/an_alternative_to_e_rate_20_another_fcc_commissioner_s_vision_for_restructuring_the_s

and predictability of this approach are appealing [...] a new allocation formula that recognizes the varied costs would simply create new complexities to replace old ones."[71]

Furthermore, libraries face an additional challenge under a system which relies on fixed allocation of funds. Simply determining a realistic and consistent number upon which to base a per-patron allocation is not feasible. Libraries do not have a universal method to identify patrons that utilize technology services; the ALA notes that "technology use often is not limited to those with library cards, and libraries have different local policies related to how often they update their patron records, so using a per-patron number also raises concern."[72] Alternative proposals, such as shifting to a form of per-building funding would be challenging as well, because libraries range dramatically in size. Consequently, an allocation per building would be equally unresponsive to actual use and need.

These proposals to change the way E-rate funding is allocated do not take into account the realities of providing broadband services to schools and libraries across the country. As the Iowa Department of Education points out, "One of the strengths of the funding mechanism in the current E-rate program is that applicants apply for and are funded based upon the actual cost of the services they need, rather than being allocated some arbitrary flat amount."[73] While complex, the current funding structure has proven incredibly responsive to the actual needs of applicants. Moving forward with program modernization, the Commission should seek to maintain this level of responsiveness to the realities on the ground. Unfortunately, a simple, predictable fixed allocation funding formula would erode the program's ability to appropriately differentiate between the myriad, complex differences between different schools and libraries' needs.

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[71] ALA Comments at 19.
[72] *Id.*
[73] Iowa Dept. of Ed. Comments at 9.

B. Given its primary objective of expanding broadband connectivity, E-rate funding should not be distributed based upon educational impact measures.

The widespread consensus among commenters that tying funding to educational impact measures is not appropriate and falls outside the scope of the E-rate program bears repeating.[74] The California Department of Education summarized these objections accurately, stating that "broadband connectivity on its own cannot determine classroom success and E-rate program success [...]. Connectivity is one of many tools that are available to districts to support and improve instruction."[75] Commenters emphasize that while connectivity is a necessary prerequisite, it is not sufficient for realizing the potential of technology to help improve student outcomes. As the California Department of Education concludes, "the causal relationship between broadband availability and academic outcomes would be tedious to document and only marginally reliable.[76]

Comments from the Education Coalition emphasize that E-rate program reform has the ability to "foster a policy climate that is open to innovation and accelerates new models of learning,"[77] but also underscore the E-rate program's statutory objective of fostering connectivity.[78] While schools and libraries are understandably enthusiastic about identifying new resources to enhance their digital learning environments, the Commission should be mindful of the purpose of the Fund. E-rate should continue to prioritize support for actual broadband connectivity, over educational software, internet-based applications, and other products.

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[74] Alaska Comments at 4; Comments of the State of Arkansas, WC Docket No. 13-184 (September 16, 2013) ("Arkansas Comments") at 10; CDE Comments at 4; KSDE Comments at 3; Nebraska CIO Comments at 6;Boston City Comments at 3-4.
[75] CDE Comments at 4.
[76] *Id.*
[77] Education Coalition Comments at 3.
[78] ibid.

C. The Fund should seek to improve support for non-traditional education—especially in the case of early education—equitably across all states where possible, rather than determining eligibility state by state.

Several commenters raised concerns about the treatment of many forms of "non-traditional" education. Currently, state definitions determine whether Head Start, pre-kindergarten, juvenile justice, and adult education students and facilities are E-rate eligible. The complex system that has emerged creates unnecessary administrative burden for public schools that provide "non-traditional" education and treats learners inequitably based upon their state of residence. Revisiting the efficacy of determining E-rate eligibility based upon individual state laws is necessary to streamline the E-rate program and to ensure that learners, regardless of geographic location, are equitably served.

In Alaska, for example, state law disqualifies classrooms that serve students enrolled in school prior to kindergarten from E-rate eligibility. Even in situations where Head Start and pre-kindergarten are provided within E-rate eligible school buildings, connectivity to classrooms that serve younger students require a separate cost allocation. We agree with the State of Alaska's comments that "preschool students should be considered ancillary and should not require a cost allocation when funding an eligible site. Excluding preschool students attending a school from E-rate support creates an administrative burden to the applicant as well as an additional burden during the review process."[79]

Massachusetts is another state where the law precludes E-rate funding for students enrolled in school prior to kindergarten. The City of Boston commented on an additional and problematic complication resulting from the differentiated treatment of Head Start and pre-kindergarten classrooms. "While inside wiring and wireless deployment are often a long-term

[79] Alaska Comments at 17.

investment, classroom assignments can change year-to-year. This year's preschool classroom could become next year's fifth grade classroom—or it could be used for educational purposes even sooner."[80] From a building management perspective, cost allocation for classrooms can differ from year to year based upon enrollment, making it more challenging for schools to determine which classrooms are eligible within a given public school.

As the E-rate program is modernized to address 21st century learning needs, it should reflect a more modern understanding of the educational value of early learning as well. Pre-kindergarten has the power to "[e]nhance language, literacy, and math skills. An analysis of 84 early education program evaluations found that programs produce, on average, about a third of a year of learning in children above their peers who didn't attend pre-K. Studies of the Tulsa and Boston pre-K programs found the effects were even larger, ranging from a half to a full extra year of learning."[81] The importance of early learning hasn't gone unnoticed by states: this year, 27 governors and the mayor of Washington, DC, referenced early education in their State of the State addresses, with over half calling for expanded access to pre-kindergarten in their states.[82] The E-rate program has the opportunity to support states as they expand access and quality of early learning environments.

The program has some precedent to establish uniform eligibility guidelines across all states. In the case of Head Start programs, for example, services for children less than three years old, as well as home based programs, are not eligible for E-rate funding. Establishing uniform

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[80] Boston City Comments at 7.
[81] Clare McCann. "Pre-K is a Win-Win, Concludes a New Report." http://earlyed.newamerica.net/blogposts/2013/pre_k_is_win_win_concludes_a_new_report-95181
[82] National Women's Law Center, Governors' 2013 State of the State Addresses: Mentions of Early Care and Education. http://www.nwlc.org/sites/default/files/pdfs/2013stateofthestateaddresses.pdf

eligibility guidelines for "non-traditional" education would serve to both reduce administrative burdens and also establish equitable service for learners across all states.

VI. Conclusion

For the reasons outlined above, we urge the Commission to ensure that high-capacity broadband is available to all schools and libraries across the country through robust investment in fiber infrastructure and a move away from reliance on outdated technologies. We further urge the Commission to incorporate flexibility for schools and libraries to extend that connectivity beyond their walls, and into the communities as appropriate given local circumstances. We also ask the Commission to modernize its data collection processes in a way that allows applicants, researchers, and the public to access data in a machine-readable format, and that the data include information from providers about prices and speeds. Finally, we note that obstacles to equity among various education constituencies still exist, and we ask the Commission to consider ways to achieve parity for these constituencies across the country.

Respectfully submitted,

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